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Oilcrops Commodity Research and the Production-to-Consumption Systems Approach

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Fats and oils are essential in the human diet. Most nutritionists agree that 20 to 25 percent of all dietary calories should come from fats and oils (FAO 1988). Nevertheless, underconsumption of fats and oils and related malnutrition are widespread. This problem is particularly severe in the fifteen nations of Africa and the five of South Asia that have the lowest per capita intake of fats and oils in the world.

Importance of the Oilcrops Commodity Group

Annual oilcrops are an important but underperforming source of edible oils and protein-rich presscake in most of the countries that are deficient in fat intake. The group underperforms in terms of its potential production of both coproducts, its effects on the environment, and its contributions to employment, income, foreign exchange savings/gains, and, particularly, improved nutrition among the resource-poor people in these twenty countries. Among the most notorious outcomes of this situation is the expensive—in terms of expenditure of limited forex—dependency on importation and use of lower-quality edible oils and the unavailability of protein cake needed to foster the production of animal protein and related goods and services.

Lower-than-recommended consumption of fats and oils among many poor rural communities, particularly oils of vegetable origin, is due in great part, although not exclusively, to environmental and socioeconomic factors that restrict or distort potential production, prices, and distribution of vegetable oils, by-products, and resulting income.

In many cases where poor communities could produce oilseeds and cooking oil for themselves and others, this is prevented by restrictions (e.g., market, credit) and competitive pressures originating within and beyond the communities. In other cases, even if communities were willing to consume more, fatty products are out of reach due to distance or price. Increasingly, also, other substitutes of lower nutritional quality compete with accessible fats and oils of vegetable origin in the household selection of foods.

The above puts into perspective 1) the urgency and socioeconomic importance of continued efforts to contribute knowledge with which to effectively foster and enhance the performance of the oilcrops commodity sector in many developing countries and 2) the complexity of the task and therefore the need for innovative methods with which to search for such useful knowledge effectively. The challenge most agricultural commodity research groups now face, particularly those dealing with annual oilcrops, is to gain greater appreciation and support for their research by properly orienting their efforts so as to benefit important and well-defined groups of people.

To meet this challenge, commodity research groups need effective mechanisms for selecting optimal research policies and interventions. Some researchers may opt to leave selection decisions to others. Most researchers, however, would like to participate in such decisions themselves. To ensure that their research results produce relevant effects and attract support for their work, researchers need to start with careful and conscious selection of their research settings and topics.

The production-to-consumption systems (PCS) concept constitutes one approach that may help researchers and other decision makers focus on research and research results-based interventions in order to improve the performance of a given agricultural commodity or commodity group (e.g., annual oilcrops). The PCS approach promotes identification of the relevant component (interest) groups within the commodity system, their individual as well as their combined expectations from and contributions to the total performance of the system, and their apparent problems and opportunities to improve such performance. Such information is a basic prerequisite for identifying relevant intervention entries within the system, including research opportunities and prioritized objectives from the perspective of different disciplines, individually or in combination. Even though the information provided by this approach is applicable to wider policy

decisions or to related research in other relevant fields, it is equally useful for identifying and justifying narrower research objectives such as breeding sesame for a certain quality of oil in high demand. It also provides a framework for monitoring and evaluating the planned research process and results.

The Production-to-Consumption Systems Research Approach to Commodity Research

A clear understanding of the relevant production-to-consumption system should facilitate the process of making relevant research and research results-based decisions that will improve the performance of a target commodity or commodity group in a specified manner.

This proposition is based on the discernment that within an agricultural commodity (sesame, for example), restrictions on availability and accessibility exist at different points along the transect of processes and influences, from production of the raw product (e.g., sesame seed) at farm level up to and including the consumption of final products (e.g., cooking oil) and by-products (e.g., protein cake) from the commodity.

Presented differently, such understanding will help each researcher perceive how his (her) research fits within the production-to-consumption system (where, affecting whom, when, and how) and its potential direct and indirect effects (social, economic, environmental). This information is basic for defining and justifying priorities and for making research decisions that are explicitly relevant to someone, somewhere, somehow.

Lessons from the farming systems research (FSR) type of approach suggest the usefulness of the systems approach in guiding the search for such understanding. The systems approach requires definition of limits around the system, the critical interactions among the components, and the critical interactions of these with the environment outside the limits of the system. The composition and relation among components constitutes the *structure* of the system. The interaction (type, timing, location and intensity of exchanges) among components, and their interaction with the system's environment, constitute the system's *behaviour*. Finally, the net effects of the

system's behaviour on its own components and on components of the environment constitute the system's *performance*. The dimensions of performance (e.g., crop yields, employment, income, etc.), the interactions, the components, and the boundaries of the system should be relevant to the decision makers and decision needs that motivated the analysis in the first place.

FSR has proven useful mainly where the scope of research decisions is restricted to production technology at farm level on a site-specific basis. Such scope appears too narrow to guide more general research policies with more than farm- and site-specific impact, particularly in the case of traditional food commodities that include oilcrops.

When the interest is in identifying commodity research priorities or policies with potential implications beyond a given farming community, the relevant system is *not* the farm. Building on experience, the proposition is that for any regional or national commodity-based research agenda, the relevant system is the regional or countrywide production-to-consumption system for that particular commodity. In other words, in the same way that the FSR approach can be used to orient agricultural research at a given site, the PCSR approach could help to orient agricultural research (and other policies) for a given commodity at a more aggregated level—either by region or by country—which also sets the stage for additional site-specific research. Thus the PCSR approach can make FSR even more effective, since it provides important insight about the environment surrounding the farm system and about the potential wider consequences of research results developed and utilized at farm level. In this way, PCSR and FSR are complementary approaches.

Summary

The production-to-consumption-system (PCS) is defined as the set of groups of people, the processes they command, and the interactions among themselves and the general environment that affect the production, processing, other components of marketing, and final utilization of a particular commodity or group of commodities such as oilcrops, sorghum and millet, or sugarcane. Figure 2.1.1 represents a first conceptual disaggregation of a PCS.

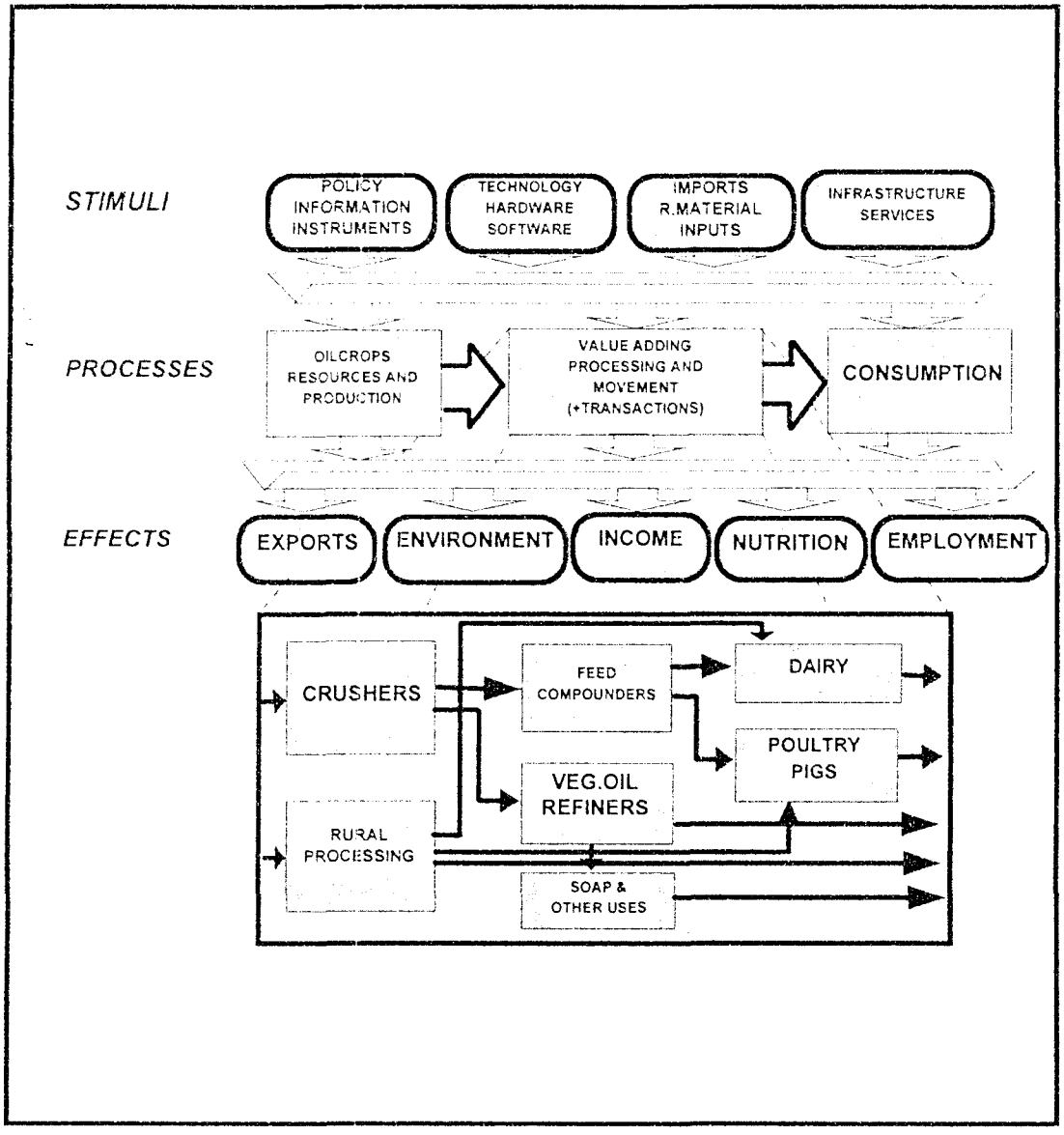

Figure 2.1.1: Production-to-Consumption Structure of the Vegetable Oil and Protein System

The production-to-consumption systems research (PCSR) approach is the approach to any research that focuses on part or all of a particular PCS with clear anticipation and concern for the spread and extent of the effects of research results (i.e., on the final performance of the PCS system).

This tool, still under development from experiences in Kenya, Nepal, and other countries, is proposed as a way of identifying means to improving performance of a commodity sector—i.e., to identify critical elements that affect selected dimensions of performance and ways to adjust them: technology, information flows, organization, policy angle. It stresses that the individual or networked action of agronomists and breeders (and, for that matter, of any other discipline in isolation) is not sufficient.

The basic hypothesis is that a comprehensive view of the system will serve the different groups interested in or able to contribute to the whole or to a particular aspect of the system's performance. The PCS approach is primarily a tool for working within a country. It is complex enough to suggest the advantages of networking among those struggling to develop, use those advantages effectively, and also provide valuable input to those who can use the outputs within a region or country (specific disciplinary teams, for example).

In summary, the PCSR initiative fosters the development and use of holistic systems approaches to obtain knowledge needed to effectively improve the performance of key agricultural commodities. Performance components include production, employment, income, forex savings/gains, food-security/nutrition, and their dimensions and efficiency in relation to the potential and sustainable utilization of resources.

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